

***Pseudogramma xanthum*, a new replacement name for a serranid fish from the subtropical South Pacific Ocean with description of the species**

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Abstract

The subtropical South Pacific serranid fish *Pseudogramma australis* Randall & Baldwin, 1997, was divided by Randall & Baldwin (1997) into two subspecies, *P. a. pasquensis* from Easter Island (type locality of *P. australis*) and *P. a. australis* from the Pitcairn Islands to Tonga. The latter is now regarded as a valid species, distinct in its yellow ground color, small size, modally one more dorsal, anal, and pectoral rays, 16 instead of 17 caudal vertebrae, larger head, and other proportional differences. Because of errors in the type designations for the two subspecies, the name *P. australis* is occupied by the Easter Island species and does not apply to the western Pacific *P. a. australis*. We provide a new replacement name, *P. xanthum* nomen novum, for *P. a. australis* and redescribe it based on the 12 known specimens, including the holotype from Temoe Atoll, Tuamotu Archipelago.

Key words: Serranidae, *Pseudogramma australis*, *P. xanthum*, redescription.

Introduction

Randall & Baldwin (1997) revised the fishes of the subtribe Pseudogrammina (Serranidae: Epinephelinae: Grammistini) and described five new Indo-Pacific species in the genus *Pseudogramma*. The description of one of these, *P. australis*, was based on specimens from Easter Island (first recorded as *Pseudogramma* sp. by Randall & Cea Egaña, 1984), Pitcairn Island, Gambier Group of the Tuamotu Archipelago, Rarotonga in the Cook Islands, and Ofolanga Island of the Ha'apai Group in Tonga.

Randall & Baldwin noted that the Easter Island specimens were red in life while the only western specimens for which there was information on color, the Tuamotu and Tonga fish, were yellow. However, all had basically the same pattern of rows of whitish blotches, irregular rows of dark red dots on the head, scattered dark red dots on the body, and a pale-edged dark blotch on the opercle. The Easter Island specimens have modally one more dorsal ray and pectoral ray, two more anal rays, and 10 + 17 instead of 10+16 vertebrae. Easter Island is the most southern of the localities, so Randall and Baldwin wrote that it is possible that the meristic differences may be due to the lower sea temperature at Easter. They added, however, that they believed the differences were more likely genetic and elected to treat the Easter Island population as subspecifically different from the Pitcairn to Tonga populations.

We have re-examined the specimens of *Pseudogramma australis*, including five more uncatalogued specimens of *P. australis* from the Bishop Museum collected at Easter Island since 1997, and we conclude that the western populations are deserving of specific status. Not mentioned previously is the larger size of Easter Island fish. The 14 Easter Island specimens collected from six stations vary from 35-61 mm SL, with only the 35 mm specimen less than 40 mm. The 12 specimens from seven stations from Pitcairn to Tonga measure 22.4-41.0 mm SL, with only two specimens, 39.1 and 41.0 mm, larger than 35 mm.

Table 5 of the description of *Pseudogramma australis* (Randall & Baldwin, 1997: 21), showing the proportional measurements of eight type specimens, includes one of 26.0 mm SL from Rarotonga and one of 33.1 mm SL from Pitcairn Island. These are the two smallest specimens measured; all the others in the table are from Easter Island. These two specimens have a larger head, longer snout, larger eye, longer upper jaw, and longer predorsal length than the Easter Island specimens. It was originally assumed that these differences were ontogenetic. Now that we have measured the remaining specimens from western localities, it is apparent that these differences are diagnostic of two different species. Herein we recognize *P. australis* as comprising two species, one from Easter Island and the other from the western Pacific.

A specimen from Easter Island, 52.9 mm SL (BPBM 6623), was designated as the holotype of *Pseudogramma australis*. Instead of naming the Easter Island subspecies *P. a. australis*, Randall & Baldwin named it *P. a. pasquensis* (from the Spanish name for Easter Island, Isla de Pascua), and designated the same Easter Island specimen (BPBM 6623) as the holotype of *P. a. pasquensis*. Simultaneously, they designated a holotype from Temoe Atoll (BPBM 13531) for the western subspecies they named *P. a. australis*. These type designations in the original descriptions of *P. australis*, *P. a. pasquensis*, and *P. a. australis* (Randall & Baldwin, 1997:23) have created nomenclatural conflicts that we resolve herein using the International Code of Zoological Nomenclature (1999; abbreviated hereafter as ICZN).

Two of the names, *P. australis* and *P. a. pasquensis*, are based on the same name-bearing type specimen (BPBM 6623). When synonyms are established simultaneously, Article

24.1 of the ICZN requires the name proposed at the higher rank to take precedence. In this case, *australis* was proposed for a species and must take precedence over *pasquensis*, which was proposed as a subspecies. Thus, *P. a. pasquensis* is considered a junior synonym of *P. australis*.

Two of the names, *P. australis* and its nominotypical taxon *P. a. australis*, are based on different name-bearing types (BPBM 6623 for *P. australis*, BPBM 13531 for *P. a. australis*). Article 61.2.1 of the ICZN indicates: “If different name-bearing types are fixed simultaneously for a nominal taxon and for its nominotypical taxon, the fixation for the taxon at higher rank takes precedence.” The holotype of *P. australis* is therefore fixed as BPBM 6623 from Easter Island, and the name *P. australis* does not apply to the western Pacific species. The name *P. xanthum* nomen novum is provided herein as a new replacement name for *P. a. australis*. As required by ICZN Article 72.7, the holotype (BPBM 13531) for the replacement name, *P. xanthum*, is the same as that of the name it replaces. Based on our examination of all available specimens of *P. xanthum*, the species is redescribed.

Materials and Methods

Type specimens were deposited in the Natural History Museum, London (BMNH), Bernice P. Bishop Museum, Honolulu (BPBM), and the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM). Lengths of specimens are given as standard length (SL). Methods of measuring and counting specimens follow Randall & Baldwin (1997).

Pseudogramma xanthum, nomen novum

(Figure 1, Table 1)

Pseudogramma australis australis Randall and Baldwin, 1997 (type locality Temoe Atoll).

Holotype: BPBM 13531, 39.1 mm, Tuamotu Archipelago, Gambier Group, Temoe Atoll (23°20'S, 134°30'W), N side of seaward reef, small cave, 41 m, rotenone, J.E. Randall and D.B. Cannoy, 16 December 1970.

Additional material examined: BMNH 1996.6.27.1, 41.0 mm, Pitcairn Island, coral rubble and stone bottom, 99-102 m, station 6, dredge haul 17, crew of “Pele”, 20 October 1967; BPBM 37393, 4:22.4-35.0 mm, same data as holotype; BPBM 16893, 33.1 mm, Pitcairn Island, N side off Gannet Ridge, coral reef, 40-44.5 m, rotenone, J.E. Randall, D.B. Cannoy, J.R. Haywood, R.R. Costello, J.D. Bryant, and S.R. Christian, 6 January 1971; BPBM 13974, 2: 22.5-26.0 mm, Cook Islands, Rarotonga, off oil tanker buoy near harbor entrance, 23-30.5 m, rotenone, J.E. Randall and D.B. Cannoy, 11 March 1971;

USNM 327795, 3: 26-27 mm, Tonga, Ha'apai Group, Ofolanga Island, SW side (19°36'15"S, 174°28'15"W), deep reef slope with sand channel at base and steep dropoff at end, 21-32 m, rotenone, J.T. Williams, B.B. Collette, G.D. Johnson, D.G. Smith, C.C. Baldwin, and E.A. Powers, 12 November 1993.

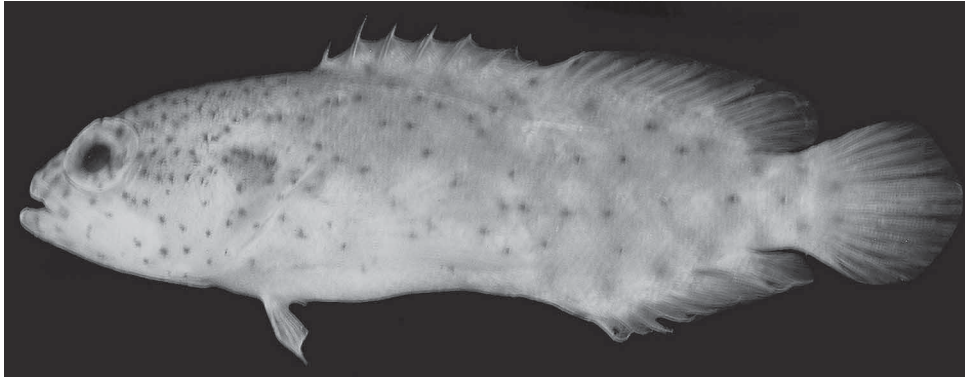


FIGURE 1. Holotype of *Pseudogramma xanthum*, BPBM 13531, 39.1 mm SL, Temoe Atoll, Tuamotu Archipelago.

Diagnosis: Dorsal rays VII, 19-21; anal rays III, 16-18 (usually 17); pectoral rays 14-15 (usually 15); one incomplete lateral line, pored scales 28-32; longitudinal scale series 50-52; gill rakers 6 + 10 or 11; a slender triangular dermal flap dorsally on eye of adults; tubular anterior nostril reaching about half way to posterior nostril when laid back; head length 40.3-43.1% SL; snout length 7.5-7.9% SL; orbit diameter 9.0-10.2% SL; upper-jaw length 19.3-21.1% SL; predorsal length 38.2-40.3% SL; head and body yellow in life with rows of large white blotches, a pale-edged brown spot on opercle; dark red dots on head, many in rows, and scattered dark red dots on body; largest specimen, 39.1mm SL.

Description: Dorsal rays VII, 20 (19-21); anal rays III, 17 (16-18); pectoral rays 15 (14-15), all rays branched in adults; pelvic rays I, 5; principal caudal rays 17; upper procurrent caudal rays 4; lower procurrent caudal rays 3; one incomplete lateral line, the pored scales 30 (28-32); longitudinal scale series 50 (about 50-52); scale rows directly above lateral line to origin of dorsal fin about 6; scale rows directly below lateral line to origin of anal fin about 17 (rows partly overlapping and difficult to count); gill rakers 6 + 11 (6 + 11 or 12); pseudobranchial filaments 10 (7-9); branchiostegal rays 7; vertebrae 10+16.

Body depth 3.55 (3.6-4.25) in SL; body width 1.8 (1.6-2.0) in body depth; head length 2.45 (2.3-2.5) in SL; snout length 5.4 (5.3-5.6) in head length; orbit diameter 4.3 (4.1-4.6) in head length; interorbital narrow and nearly flat, the least fleshy width 11.5 (10.9-12.5) in head length; caudal-peduncle depth 3.2 (3.25-3.5) in head length; caudal-peduncle length 5.35 (5.25-5.45) in head length.

TABLE 1. Proportional measurements of type specimens of *Pseudogramma xanthum* expressed as percentages of the standard length.

	Holotype	Paratypes				
	BPBM 13531	BPBM 13974	BPBM 13974	BPBM 16444	BPBM 16893	BPBM 37393
Standard length (mm)	39.1	22.3	26.0	26.8	33.1	36.3
Body depth	28.1	23.5	26.9	25.3	27.8	27.6
Body width	15.7	14.3	13.2	15.9	15.0	14.5
Head length	40.7	43.1	42.7	40.3	41.0	41.8
Snout length	7.5	7.9	7.7	7.6	7.6	7.5
Orbit diameter	9.5	10.2	10.0	9.8	9.0	9.1
Interorbital width	3.5	3.9	3.4	3.7	3.5	3.4
Upper-jaw length	19.3	20.3	20.4	19.4	21.1	19.3
Caudal-peduncle depth	12.7	12.3	12.2	11.9	12.1	12.8
Caudal-peduncle length	7.6	7.9	7.9	7.7	7.6	7.7
Predorsal length	38.2	40.3	40.0	38.4	39.3	38.6
Preanal length	66.5	65.0	65.3	65.1	64.8	66.7
Prepelvic length	33.8	35.8	34.6	33.6	32.4	33.7
Dorsal fin base	57.7	54.7	53.8	54.3	56.2	55.6
First dorsal spine	7.3	7.9	7.7	7.5	7.6	7.3
Longest dorsal spine	10.2	broken	10.8	10.4	10.7	10.6
Last dorsal spine	8.2	9.0	9.3	8.3	9.1	8.6
Longest dorsal ray	14.3	broken	broken	14.7	15.8	broken
Anal-fin base	28.2	27.9	28.7	29.4	28.2	27.8
First anal spine	5.9	5.8	5.0	5.6	5.7	5.9
Second anal spine	10.0	9.0	9.6	9.6	9.4	9.7
Third anal spine	7.4	7.5	7.3	7.3	7.5	7.6
Longest anal ray	14.4	15.3	15.8	14.6	16.1	broken
Caudal-fin length	22.8	24.4	broken	23.5	25.4	broken
Pectoral-fin length	31.8	32.8	34.2	33.0	31.8	33.9
Pelvic-spine length	7.8	7.6	8.6	8.2	8.9	8.4
Pelvic-fin length	15.3	15.9	15.7	15.1	15.4	16.0

Mouth terminal or with lower jaw slightly projecting, oblique, forming an angle of about 35° to horizontal axis of head, and large, the maxilla extending well beyond a verti-

cal at rear edge of eye, the upper-jaw length 2.1 (1.95-2.15) in head length; a small, triangular, ventrally-projecting, bony process posteriorly on maxilla; a small fixed incurved canine tooth (sometimes a close-set pair) anteriorly on each side of upper jaw; an inner band of small, conical, inwardly depressible teeth at front of upper jaw in about 6 irregular rows, progressively longer medially, the innermost symphyseal teeth longer than canines, though more slender; band of teeth narrowing to 1 or 2 irregular rows posteriorly in jaw; dentition of lower jaw similar to upper but without the fixed canines, with only 4-5 rows of teeth anteriorly, the largest teeth of inner row continuing along side of jaw; vomer with a V-shaped patch of small conical teeth in 3 irregular rows; palatines with a long band of small conical teeth in 1-2 irregular rows. Tongue long and slender, reaching slightly anterior to vomerine teeth.

Opercle with 3 flat spines covered by scales; posterior margin of preopercle with a strong spine projecting obliquely downward, its base at level of lower edge of eye. A slender triangular flap longer than pupil extending upward from dorsal surface of eye (small and more triangular on smallest paratypes).

Tubular anterior nostril near base of upper lip at level of lower edge of pupil, reaching about half distance to posterior nostril when laid back; posterior nostril at edge of orbit, slightly dorsal to anterior nostril, and vertically oval with a slight rim. A pair of large pores in midinterorbital space with a median pore behind; 12 other large pores encircling orbit; 4 large pores on mandible continuing as 7 pores along edge of preopercle.

Scales on body small and adherent, their surface with prominent horizontal ridges, those posterior to about tenth lateral-line scale rhomboid and ctenoid, the middle cteni longest; small cycloid scales on nape extending into posterior interorbital space; small cycloid scales on opercle and cheek; rest of head naked; small scales on about basal half of fins except pelvics where only basally; no scales in axil of pectoral fins; lateral line paralleling dorsal contour of body, ending below middle of base of soft portion of dorsal fin.

Origin of dorsal fin above fifth lateral-line scale, the predorsal length 2.6 (2.5-2.6) in SL; first dorsal spine 5.6 (5.4-5.75) in head length; fifth or sixth dorsal spines longest, 4.0 (3.8-3.95) in head length; last dorsal spine 4.95 (4.5-4.85) in head length; longest dorsal soft ray 2.85 (2.6-2.75) in head length; origin of anal fin below base of third dorsal soft ray, the preanal length 1.5 (1.5-1.55) in SL; first anal spine 6.9 (7.1-8.55) in head length; second anal spine clearly largest, 4.7 (4.2-4.8) in head length; longest anal soft ray 2.8 (2.55-2.8) in head length; caudal fin rounded and small, 1.8 (1.6-1.5) in head length; middle pectoral rays longest, 1.3 (1.2-1.3) in head length; origin of pelvic fins anterior to base of pectorals, the prepelvic distance 2.95 (2.8-3.1) in SL; second and third pelvic soft rays longest, 2.65 (2.6-2.7) in head.

Color of holotype entirely pale yellowish. Color when fresh light yellow, shading to white on abdomen, chest, and ventral half of head, with two rows of indistinct pale blotches larger than pupil, one positioned midlaterally and one on lower side, scattered dark red dots (red with dark brown centers) on body; opercle with irregular pale-edged

brown blotch rimmed with dark red dots; numerous dark red dots on dorsal half of head, those on lower half of head more widely separated but most arranged in lines, four of which pass ventrally from anterior half of eye, the first three crossing lips onto chin; fins light yellowish, the dorsal with a few dark red dots on base.

A color photo (by JTW) of a specimen from Tonga is essentially the same as that of the holotype (Fig. 1) from the Tuamotu Archipelago.

Etymology: The specific epithet is derived from the Greek adjective *xanthos*, meaning yellow, in reference to the ground color of the body.

Remarks: The species redescribed above was first treated as a subspecies of *Pseudogramma australis*, but was mistakenly named *P. a. australis*. The name *P. australis* has been shown above to be occupied by the Easter Island species and does not apply to the western species. The subspecies *P. a. pasquensis* is a junior synonym of *P. australis*. Thus there is no name available for the western species of the *P. australis* group, and we provide *P. xanthum* as the new replacement name for *P. a. australis*.

Pseudogramma australis and *P. xanthum* have the same basic color pattern, but differ in ground color, red for the former and yellow for the latter. However, we have records of the life color of *P. xanthum* from only Temoe and Tonga. In addition to the meristic differences between *P. xanthum* and *P. australis* discussed for the two subspecies of *australis* in Randall & Baldwin (1997: tables 1-3), and the smaller size of *xanthum*, we note the following differences in proportional measurements: *P. xanthum* has a larger head (40.7-43.1% SL, compared to 37.0-39.4% for *P. australis*); longer snout (7.5-7.9% SL, compared to 6.7-7.4% for *P. australis*); longer upper jaw (19.3-21.1% SL, compared to 18.5-19.7%); and longer predorsal length (38.2-40.3% SL, compared to 36.4-38.2%). The eye size of *P. xanthum* is larger (9.0-10.2% SL, compared to 8.4-9.1%), but this is probably due to the smaller size of the specimens of *P. xanthum*. From the tables, *P. xanthum* seems to have a shorter caudal fin, but only three specimens could be measured due to the poor condition of most specimens.

Acknowledgments

We thank A.C. Gill and D.G. Smith for initially alerting us as to the name conflicts. Special thanks go to W. D. Anderson, Jr., W. N. Eschmeyer, and D. G. Smith for insightful discussions of the 1999 ICZN and its application to the issues dealt with in this paper.

References

- International Commission on Zoological Nomenclature (1999) *International Code of Zoological Nomenclature, Fourth Edition*. International Trust for Zoological Nomenclature, London. 306 pp.

- Randall, J.E. & Baldwin, C.C. (1997) Revision of the serranid fishes of the subtribe Pseudogrammina, with descriptions of five new species. *Indo-Pacific Fishes*, 26, 1-56.
- Randall, J.E. & Cea Egaña, A. (1984) Native names of Easter Island fishes, with comments on the origin of the Rapanui people. *Occasional Papers of the Bernice Pauahi Bishop Museum*, 25(12), 1-16.